

WHAT IS CLAIMED IS:

1. A process for the isomerization of xylenes comprising contacting an aromatics-containing hydrocarbon feed stream with a catalyst system comprising beta zeolite and pentasil zeolite under isomerization conditions and recovering a product stream comprising a greater amount of para-xylene than in the feed stream.
- 5 2. The process of claim 1 wherein the catalyst system is contacted under at least partial liquid phase conditions.
3. The process of claim 2 wherein the at least partial phase liquid conditions include the absence of added hydrogen.
- 10 4. The process of claim 1 wherein the isomerization conditions comprise a space velocity from about 0.1 to about 20 hr⁻¹, a temperature from about 100° to about 400°C and a pressure from about 10 kPa to about 5 MPa absolute.
5. The process of claim 4 wherein the isomerization conditions comprise a space velocity from about 0.5 to about 10 hr⁻¹, a temperature from about 150° to about 300°C and a pressure from about 100 kPa to about 3 MPa absolute.
- 15 6. The process of claim 1 wherein the catalyst system is essentially free of a hydrogenation metal component.
7. The process of claim 1 wherein the catalyst system further comprises a binder selected from the group consisting of alumina, silica, and mixtures thereof.
- 20 8. The process of claim 7 wherein the binder is alumina.
9. The process of claim 1 wherein the pentasil zeolite is a MTW-type zeolite.

10. The process of claim 1 wherein the beta zeolite is a surface modified beta zeolite.

11. The process of claim 10 wherein the surface modified beta zeolite results from acid washing of a templated native zeolite. 

5 12. A process for the isomerization of xylenes comprising contacting a C₈ aromatics containing hydrocarbon feed stream, which comprises ethylbenzene, with a catalyst system comprising a beta zeolite catalyst and a MTW-zeolite catalyst under at least partially liquid phase at isomerization conditions, and recovering a product stream comprising para-xylene, wherein the amount of para-xylene in the product is at least near
10 the equilibrium amount.

13. The process of claim 12 wherein the binder is selected from the group consisting of alumina, silica, zeolites, and mixtures thereof.

14. The process of claim 12 wherein the beta zeolite catalyst is essentially free of a metal hydrogenation component.

15 15. The process of claim 12 wherein the isomerization conditions comprise a space velocity from about 0.5 to about 10 hr⁻¹, a temperature from about 150° to about 300°C and a pressure from about 100 kPa to about 3 MPa absolute.

16. The process of claim 15 wherein the isomerization conditions further comprise the absence of a substantial amount of hydrogen.

20 17. A catalyst system for the isomerization of xylenes comprising a combination of a first catalyst comprising beta zeolite and a second catalyst comprising pentasil zeolite.

18. The catalyst system of claim 17 wherein the pentasil zeolite is selected from the group of zeolite types consisting of MFI, MEL, MTW, TON or mixtures thereof.

19. The catalyst system of claim 18 wherein the pentasil zeolite is MTW-type zeolite.

5 20. The catalyst system of claim 17 wherein the second catalyst further comprises a platinum-group metal.

21. The catalyst system of claim 17 wherein either catalyst further comprises a zeolite-free inorganic oxide binder.

22. The catalyst system of claim 21 wherein the binder is alumina.

10 23. The catalyst system of claim 17 wherein the beta zeolite is a surface modified beta zeolite.

24. The catalyst system of claim 23 wherein the surface modified beta zeolite results from acid washing of a tetraalkylammonium salt templated native zeolite.

15 25. The catalyst system of claim 17 wherein either catalyst further comprises a halogen component.

26. The catalyst system of claim 17 wherein a first:second mass ratio is from about 1:50 to about 50:1.

27. The catalyst system of claim 17 wherein the combination is a physical mixture of first particles comprising the beta zeolite and second particles comprising the pentasil-
20 zeolite.

28. The catalyst system of claim 17 wherein the proportion of beta zeolite in the first catalyst is from about 10 to about 80 mass-% of the first catalyst.

29. The catalyst system of claim 17 wherein the proportion of pentasil zeolite in the second catalyst is from about 50 to about 90 mass-% of the second catalyst.

30. The catalyst system of claim 17 wherein the pentasil zeolite is characterized by silica to alumina ratio greater than about 20 and less than about 45.

5 31. The catalyst system of claim 17 wherein the first catalyst is essentially free of a metal hydrogenation component.